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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,690	11/15/2001	Rory A.J. Curtis	MNI-206	2547

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EXAMINER	
MONSHIPOURI, MARYAM	

ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 06/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
10/003,690	Curtis et al.
Examiner	**Art Unit**
Maryam Monshipouri	1652

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above, claim(s) *12-20 and 22-25* is/are withdrawn from consideration.

5) ☒ Claim(s) *1 and 2* is/are allowed.

6) ☒ Claim(s) *3-11 and 21* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 7
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Applicant's response to restriction requirement filed 4/3/2003 (Paper #6) is acknowledged. Applicant elected Group I invention directed to claims 1-11 and 21 without traverse. Claims 12-20 and 22-25 are withdrawn as drawn to non-elected invention.

DETAILED ACTION

Claims 1-11 and 21 are under examination on the merits.

Specification

The specification is objected for being incomplete. Applicant is advised to fill in the gaps corresponding to ATCC deposit number such as that shown in page 10), everywhere, in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first and second paragraphs of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
>
> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "stringent conditions" in claim 6 is indefinite. Applicant refers to various non-limiting examples of stringency conditions in the specification (see page 15) without

specifying which salt and temperature conditions are associated with the term "stringent conditions". Applicant may overcome this rejection by recitation of utilized salt and temperature conditions used for preparing DNA molecules of claim 6 into said claim, based on the support provided in the specification.

3. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 3 is incomplete because the gap corresponding to ATCC deposit number is not filled in.

4. Claims 4-11 and 21 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for DNA molecules encoding SEQ ID NO:2 and fragments thereof with eukaryotic kinase activity, does not reasonably provide enablement for and of the following:

(A) DNA molecules encoding naturally occurring allelic variants (see page 14 of the specification) of SEQ ID NO:2,

(B) DNA molecules having 60% identity to SEQ ID NO:1 and 3,

(C) DNA molecules comprising at least 30 nucleotides of SEQ ID NO:1 or 3,

(D) DNA molecules encoding a polypeptide comprising at least 10 contiguous amino acids of SEQ ID NO:2,

(F) DNA molecules which hybridize to SEQ ID NO:1, 3 or any of the above mentioned DNA molecules under "stringent conditions".

The criteria for undue experimentation, summarized in *re Wands*, 8, USPQ2n 1400 (Fed. Cir. 1988) are: 1) the quantity of experimentation necessary, 2) the amount of direction or guidance presented, 3) the presence and absence of working examples, 4) the nature of the invention, 5) the state of prior art, 6) the relative skill of those in the art, 7) the predictability or unpredictability of the art, and 8) the breadth of the claims.

The specification merely teaches that "naturally occurring allelic variants" typically result in 1-5% variance (see page 14) in the DNA sequence of Eukaryotic Protein Kinase- 55053 (EPK-55053). However this teaching does not specify which exact residues at what location within the structure of SEQ ID NO:1 and 3 should be retained in order to encode allelic variants of SEQ ID NO:2 (see part A). Lack of enablement is even more grave with respect to non-functional allelic variants as in this case neither the structure nor the function of said variants are taught or exemplified in the specification. In such case it is not clear how one of skill in the art can distinguish between a random SEQ ID NO:1 and 3 mutant, retaining at least 95% identity to said sequences and the non-functional allelic variants.

This lack of guidance about the structure of critical residues which result in expression products with kinase activity is also applicable to DNA molecules (B)-(F), shown above. Applicant is well aware that 30 nucleotides or 10 contiguous amino acids by themselves (see parts (C)-(D), or 60% structural identity to SEQ ID NO:2, in the absence of said polypeptide crystal structure, or hybridizing to SEQ ID NO:1 or 3 under "stringent conditions" , which by itself is unclear, are totally insufficient to encode any product with function . Thus, some further

guidance about the structure of claimed DNA molecules are necessary, which is not provided in the specification.

Furthermore, the specification does not recite any examples of the DNA molecules of parts (A)-(F). The state of prior art indicates that any DNA molecule which displays up to 5% variance relative to that encoding a full-length polypeptide (part A), or can hybridize to a sequence encoding a full-length polypeptide (Part F), or happens to comprise a region of that can encode a fragment of said full-length polypeptide (parts C-D), or happens to retain 60% identity to those encoding a full-length polypeptide (part B) is not necessarily to encode a product with a function similar to said full-length polypeptide.

Therefore due to lack of sufficient guidance and examples provided in the specification and due to unpredictably of prior art as to which resides in DNA molecules (A)-(F) should be retained in order to encode a product with kinase activity one of skill in the art has to go through the burden of undue experimentation in order to screen for DNA molecules that are within the scope of this invention and as such the claims go beyond the scope of the disclosure.

Applicant is reminded that DNA molecules of part (B) are further subject to lack of enablement because the specification does not teach which residues in said DNA molecules should be retained in order to encode a product which retains its three dimensional structure such that it can have kinase function. Applicant is well aware that when 40% of total nucleotide residues of a DNA sequence is randomly deleted, substituted, or replaced it is more than likely said mutated product can no longer encode a protein with the right conformation to have any

catalytic activity. Hence, in this particular case DNA molecules of part (B), in view of the absence of SEQ ID NO:2 crystal structure, impose an undue burden of experimentation on the skilled artisan even in terms of making such products and hence the claims go beyond the scope of this disclosure even further.

Since the DNA molecules of claims 4-6 are not enabled, their fusion products (claim 7) , vectors, and host cells comprising said DNA molecules (claims 8-10) and methods of expressing said molecules (claim 11), kits comprising sequences that hybridize to DNA molecules of claims 4-6 (see claim 21) are not enabled either.

5. Claims 4-11 and 21 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 4-6 and their dependent claims 7-11 and 21 are directed to the following **genera** of DNA molecules which have not been adequately described in the specification..

(A) DNA molecules encoding naturally occurring allelic variants of SEQ ID NO:2 (see page 14 of the specification),

(B) DNA molecules having 60% identity to SEQ ID NO:1 and 3,

(C) DNA molecules comprising at least 30 nucleotides of SEQ ID NO:1 or 3,

(D) DNA molecules encoding a polypeptide comprising at least 10 contiguous amino acids of SEQ ID NO:2,

(F) DNA molecules which hybridize to SEQ ID NO:1, 3 or any of the above mentioned DNA molecules under "stringent conditions".

The specification does not contain any disclosure of the function of all DNA sequences that are 60% identical to SEQ ID NO:1 or 3 (part B), or can hybridize to SEQ ID NO:1 or 3 , under stringent conditions (Part F), or comprises a region of at least 30 nucleotides encoding a fragment of SEQ ID NO:2 of alt least 10 amino acids in length (see parts C-D) or the function of non-functional allelic variants of SEQ ID NO:1 or 3 (part A).

Applicant's attention is respectfully drawn to the following issue directed additionally to DNA molecules of part (A): the specification defines "allelic variations" (see page 14) as "... include both functional and non-functional EPK055053 proteins and can typically result in 1-5% variance in the nucleotide sequences of an EPK-55053 gene. Any and all such nucleotide variations are resulting in amino acid polymorphism in EPK-55053 genes that are the result of natural allelic variation and that do not alter the functional activity of an EPK protein are intended to be within the scope of this invention.".This definition does not provide any specific information about the structure of naturally occurring (alleles) variants of SEQ ID NO:2 (i.e. where is the likely regions within which mutations are likely to occur) nor discloses any function for non-functional naturally occurring allelic variants. There is no description of the mutational sites that exist in nature, and there is no description of how the structure of SEQ ID NO:2 relates to the structure of any naturally occurring alleles. The general knowledge in the art concerning alleles does not provide any indication of how one allele is representative of unknown alleles.

The nature of alleles is such that they are variant structures, and in the present state of the art structure of one does not provide guidance to the structure of others.

Therefore, it logically follows that the genera of cDNAs that comprise these above cDNA molecules (parts (A)-(F)) is a large variable genera with the potentiality of encoding many different proteins. Many functionally unrelated DNAs are encompassed within the scope of these claims, including partial DNA sequences. The specification discloses only a **single species** (DNA sequences encoding SEQ ID NO:2) of the claimed genera which is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genera. Hence, one skilled in the art cannot reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

Since the DNA molecules of claims 4-6 are not adequately described their fusion products (claim 7) , vectors, kits and host cells comprising said DNA molecules (claims 8-10), methods of expressing said molecules (claim 11), and kits comprising sequences that hybridize to DNA molecules of claims 4-6 (see claim 21) are not adequately described either.

Applicant is referred to the revised interim guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Cheret et al. (Database PIR-73, accession No. S37928, 5/1994). Cheret teaches a DNA sequence that encodes a polypepitde comprising a fragment of SEQ ID NO:2 of at least 10 contiguous amino acids, prior to this invention (see the attached alignment, residues 152-165 of SEQ ID NO:2) anticipating claim 5. Cheret's sequence is also capable of hybridizing to DNA molecule of claim 5(d) under "stringent conditions", (anticipating claim 6).

8. ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 7-11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheret (cited above) in view of either current gene expression techniques or gene detection techniques. As mentioned above Cheret teaches a DNA sequence that encodes a polypepitde YKL453, comprising a fragment of SEQ ID NO:2 of at least 10 contiguous amino acids, prior to this invention. Cheret does not teach fusion products, vectors and host cells comprising said

sequence, methods of expressing said sequence or kits comprising sequences that hybridize to said sequence.

Current gene expression techniques teach that once a useful DNA sequence is identified it is routine practice to place it in an expression vector and transform a host cell with said vector such that upon fermentation of said host, under appropriate conditions, the expression product of said useful gene could be isolated. Similarly, current gene detection techniques teach that once a useful gene or fragment thereof is identified it (both starnds , sense and complementary) can routinely be placed in a kit for detection of said gene in other hosts and/or tissues.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to start with the DNA sequence of Cheret and place it in an appropriate vector and host before expressing it according to current gene expression techniques. One of skill in the art is motivated to place the DNA sequence of Cheret in appropriate vector and host before expressing the product of said gene recombinanlty, or place it in a kit for detecting said gene (both strands, sense and complementary) in unknown samples, hosts or tissues, because Cheret discloses that it's DNA may be encoding a protein kinase in yeast, which is a useful biocatalyst.

Furthermore, one of ordinary skill in the art has a reasonable expectation of success in preparing said expression product, recombinantly, or place said sequence in a kit for detecting said YLK453 encoding gene in unknown samples, host, or tissues, because methods of preparing recombinant vectors, hosts and gene expression products as well as methods of preparing gene

detection kits for screening unknown samples are well established in the prior art, rendering claims 7-11 and 21 obvious.

Allowable Subject Matter

Claims 1-2 are allowed. This is because DNA sequences encoding SEQ ID NO:2 are free of prior art. Further, the prior art does not teach or suggest preparing such specifically claimed DNA sequences. Hence, said sequences are also non-obvious.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Maryam Monshipouri, Ph.D. whose telephone number is (703) 308-1083.

The Examiner can normally be reached daily from 8:30 A.M. to 5:00 P.M.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Dr. P. Achutamurthy, can be reached at (703) 308-3804. The OFFICIAL fax number for Technology Center 1600 is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-0196.

M. Monshipouri

MARYAM MONSHIPOURI, PH.D.
PRIMARY EXAMINER